The opinion in support of the decision being entered today was **not** written for publication and is **not** precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte JOSEPH A. FERNANDO,
JOHN D. TEN EYCK,
and THOMAS S. LACKI

Appeal No. 2005-0979
Application No. 09/560,469

HEARD: June 7, 2005

Before GARRIS, DELMENDO, and PAWLIKOWSKI, **Administrative Patent Judges**.

PAWLIKOWSKI, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-27 and 41-44. Claims 28-40, 45, and 46 have been withdrawn from consideration. See brief, page 2.

A copy of claims 1 and 12 are set forth below:

1. A device for the treatment of exhaust gases comprising:
a housing having an inlet at one end and an outlet at an opposite end through which exhaust gases flow;

a fragile structure resiliently mounted within said housing, said fragile structure having an outer surface and an inlet end surface at one end in communication with said inlet of said housing and an outlet end surface at an opposite end in communication with said outlet end of said housing;

a support element disposed between the housing and the fragile structure, said support element comprising an integral, substantially non-expanding ply of melt-formed ceramic fibers containing alumina and silica, said fibers having been prepared by a process including heat treating said fibers under a time-temperature regimen comprising heat treating said fibers at a temperature of 990°C to at least 1050°C for greater than 1 hour such that the treated fibers have about 5 to about 50 percent crystallinity as detected by x-ray diffraction, and a crystallite size of about 50Å to about 500Å; and

wherein said support element exerts a minimum residual pressure for holding said fragile structure within said housing of one of at least 4 psi after 200 cycles of testing at 900°C or at least 10 psi after 1000 cycles of testing at 750°C.

12. A device for the treatment of exhaust gases comprising:

a housing having an inlet at one end and an outlet at an opposite end through which exhaust gases flow;

a fragile structure resiliently mounted within said housing, said fragile structure having an outer surface and an inlet end surface at one end in communication with said inlet of said housing and an outlet end surface at an opposite end in communication with said outlet end of said housing;

a support element disposed between the housing and the fragile structure, said support element comprising an integral, substantially non-expanding ply of melt-formed ceramic fibers containing alumina and silica, said fibers having been prepared by a process of heat treating said fibers under a time-temperature regimen comprising heat treating said fibers at a temperature of greater than 1050°C for an effective amount of time such that the treated fibers have about 5 to about 50 percent crystallinity as

detected by x-ray diffraction, and a crystallite size of about 50Å to about 500Å;

wherein said support element exerts a minimum residual pressure for holding said fragile structure within said housing of one of at least 4 psi after 200 cycles of testing at 900°C or at least 10 psi after 1000 cycles of testing at 750°C.

On page 4 of the brief, appellants group the claims into two groupings. Group I is directed to claims 1-11, 41, and 42, of which claim 1 is independent. Group II is directed to claims 12-27, 43, and 44, of which claim 12 is independent. We therefore consider claim 1 and claim 12 in this appeal. We note that although appellants discuss claim 4 in the reply brief, this claim is not under consideration in this appeal according to the groupings made by appellants on page 4 of the brief. See 37 CFR § 1.192(c)(7)(2003); see also 37 CFR §41.37 (c)(1)(vii)(effective September 13, 2004; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)).

Claims 1-27 and 41-44 stand rejected under 35 U.S.C. § 103 as being obvious over Robinson in view of Sasaki, and further in view of Johnson.

We note that the 35 U.S.C. § 112, second paragraph, rejection has been withdrawn by the examiner. Answer, page 2.

The examiner relies upon the following references as evidence of unpatentability:

Robinson et al. (Robinson)	5,580,532	Dec. 03, 1996
Johnson et al. (Johnson) (Great Britain Patent Publication)	1 481 133	Jul. 27, 1977
Sasaki et al. (Sasaki) (Japanese Patent Publication)[1]	JP 07-286514	Oct. 31, 1995

OPINION

We have carefully reviewed appellants' brief and reply brief, and the examiner's answer, and the evidence of record. This review has led us to conclude that the examiner's rejection is well-founded.

I. The 35 U.S.C. § 103 rejection of claims 1-27 and 41-44 as being obvious over Robinson in view of Sasaki and Johnson

We consider claims 1 and 12 in this rejection.

The examiner's position for this rejection is set forth on pages 3-5 of the answer. Appellants respond to this rejection on pages 1-14 of the brief, and also in the reply brief.

Appellants' arguments focus on the particular formation of the "melt-formed" ceramic fibers, used to make support element 20. In this regard, claim 1 recites that the support element comprises a "substantially non-expanding ply of **melt-formed** ceramic fibers containing alumina and silica" [emphasis added], wherein the fibers have "been prepared by a process including heat treating said fibers under time temperature regimen comprising heat treating the fibers at a temperature of 990ºC to at least 1050ºC for greater than 1 hour such that the treated

[1] We use the English translation of the Sasaki reference.

fibers have about 5 to about 50 percent crystallinity" and "a crystallite size of about 50Å to about 500Å".

Claim 12 recites that the **melt-formed** ceramic fibers are formed by a process comprising "heat treating said fibers at a temperature of greater than 1050°C for an effective amount of time such that the treated fibers have about 5 to about 50 percent crystallinity, and a crystallite size of about 50Å to about 500Å" [emphasis added].

At the bottom of page 7, and at the top of page 8 of appellants' specification, appellants' specification discloses that the support element comprises substantially non-expanding ply of melt-formed ceramic fibers containing alumina and silica wherein the fibers have been prepared by a process involving a particular time temperature regimen, as described at the top of page 8 of the specification. On page 14 of the specification, beginning at line 14, the specification discloses that the ceramic fibers are melt-formed ceramic fibers containing alumina and silica, and more preferably, are melt spun refractory ceramic fibers. More particularly, these fibers have been heat treated at temperatures ranging from at least 990°C to about 1400°C, such that the fibers exhibit suitable handling properties and resilience, have at least 5 to about 50 percent crystallinity as detected by x-ray diffraction, and a crystallite size of from about 50Å to about 500Å. At line 26, on page 14 of appellants' specification, the specification discloses that fibers utilized in the plies are melt-formed, preferably spun fibers of high purity chemically.

At the top of page 9 of the brief, appellants state that Sasaki discloses a catalyst holder for an exhaust gas treatment device, and the holder comprises "a blanket of alumina fibers of mullite composition". Our review of Sasaki is discussed below.

We refer to the Abstract, on pages 1-2 of the English translation of Sasaki, which discloses that the blanket is made by laminating alumina fiber, and the weight ratio of Al_2O_3/SiO_2 is 70/30 to 74/26, and needle-punching of some of the fiber is conducted to orient the fiber in the vertical direction in relation to the laminated surface. Also, claim 1 of Sasaki, as set forth on page 2 of the English translation of Sasaki, recites that the holder is comprised of a blanket made by laminating alumina fiber having a weight ratio of Al_2O_3/SiO_2 from 70/30 to 74/26.

In paragraph [006], on page 4 of the English translation of Sasaki, the preferred crystallinity of the mullite composition alumina fiber is from 0 to 10 percent. This falls within the claimed range of the crystallinity recited in appellants' claim 1 and in appellants' claim 12. The mullite composition alumina fiber is sintered at 1300°C for four hours. This time and/or temperature regimen overlaps the time temperature regimen recited in appellants' claim 1 and in appellants' claim 12.

Hence, contrary to appellants' statement made on page 7 of the reply brief (that Sasaki does not teach appellants' claimed time temperature regimen for heat treating), Sasaki does in fact teach the claimed subject matter in this regard.

With regard to appellants' argument that Sasaki's fibers are formed by a sol-gel process, and that this differs from the claimed requirement of "melt-formed" ceramic fibers, we provide the following comments.

In paragraph [008], on page 5 of the English translation of Sasaki, Sasaki discloses that the blanket made by laminating alumina fiber, can be produced using a generally known blanket production method. "For example, an organic binder, such as alumina sources, for instance alumina oxychloride, etc.; silica

sources, for instance silica sol, etc., or; polyvinyl alcohol, etc., is mixed with water and then spun to obtain an alumina precursor".

Although appellants' argue that the "melt-formed" ceramic fibers (which are then subjected to the time/temperature regimen recited in claim 1 and in claim 12), differ from sol-gel fibers, we are not convinced by such argument. That is, the real issue is whether the product (support element or blanket) of a melt formed ceramic fiber, subjected to a particular time-temperature regimen process, is different from the product of a sol-gel ceramic fiber that is subjected to the same time-temperature regimen process. The evidence before us indicates that the resultant product is the same, for the following reasons.

First, as pointed out by the examiner in the paragraph bridging pages 4-5 of the answer, Sasaki discloses a ceramic fiber that is heat treated within appellants' claimed temperature and time range, and thus, the heat treated fiber of Sasaki "inherently possesses the same properties as that of the instant claims".

Furthermore, as discussed above, Sasaki teaches that the blanket has a crystallinity from about 0 to 10 percent, which falls within appellants' claimed crystallinity. Although Sasaki is silent with regard to the crystallite size, we agree with the examiner's inherency theory. We note that it is well settled that "when the claimed and prior art products are identical or substantially identical or are produced by an identical or substantially identical process, the PTO can require an applicant to prove that the prior art does not necessarily or inherently possess the characteristics of his claimed product." In re Best, 652 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977).

Moreover, the argument regarding the manner of formation of the support element raises the issue pertaining to product-by-process limitations. A product-by-process limitation is not a method limitation, but rather a product limitation in which the product is defined, in whole or in part, by the process used to make the product. In *ex parte* proceedings before the PTO, product-by-process claims are interpreted as not being limited by the process steps recited in the claims, because product-by-process claims define a product rather than a process. See In re Thorpe, 777 F.2d 695,697, 227 USPQ 964, 965-66 (Fed. Cir. 1985). It follows, accordingly, that any reference in the prior art to the same, or similar compound, no matter how made, may render the claim anticipated or obvious. Thus, the claim is interpreted as covering the claimed product, no matter how it is made. In the instant case, Sasaki discloses a similar or identical support element, which therefore establishes a prima facie case of obviousness.

Hence, the burden shifts to appellants to show that in fact the blanket (support element) of Sasaki does not achieve the same properties as claimed (including the claimed ability to exert a minimum residual pressure for holding the fragile structure of at least 4 psi after 200 cycles of testing at 900ºC, or at least 10 psi after 1000 cycles of testing at 750ºC).

In this regard, appellants discuss Table I, found on pages 22-23 of their specification, and refer to examples 1-10, and compare these examples with comparative examples A-D. On page 12 of the brief, appellants state that comparative examples C and D were heat treated in accordance with the teachings of Johnson. However, there is no comparative example using the method of Sasaki.

Hence, absent rebuttal evidence in this regard, the examiner's prima facie case of obviousness has not been overcome by the data set forth in appellants' Table I. That is, there is no comparative example that replicates an example from Sasaki regarding the fiber formation and making the blanket, the resultant properties of such a blanket, including testing such a blanket at 900ºC at 200 cycles and then at 1000 cycles at 900ºC.

In view of the above, we therefore affirm the 35 U.S.C. § 103 rejection of claims 1-27 and 41-44 as being obvious over Robinson in view of Sasaki and Johnson. We need not comment on the references of Robinson or Johnson in making this determination.

II. Conclusion

The obviousness rejection is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(iv)(effective Sept. 13, 2003; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat. Office 21 (Sept. 2004)).

AFFIRMED

BRADLEY R. GARRIS)
Administrative Patent Judge)
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